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For: SOUND CARD, COMPUTER SYSTEM USING THE SOUND CARD AND CONTROL  
METHOD THEREOF

**SUBMISSION OF VERIFIED ENGLISH TRANSLATION**

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Sir:

Attached is a Statement of Accurate Translation and an English Translation of the  
Priority Document, Korean Application No. 10-2002-0072845, filed on November 21, 2002.

It is respectfully requested that the English translation of Priority Document and  
Statement of Accurate Translation be entered in the above-referenced application.

If there are any additional fees associated with filing of this Statement, please charge the  
same to our Deposit Account No. 19-3935.

Respectfully submitted,

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## DECLARATION

I, KIM, Hong-rae, translator, working at Leaders Bldg. 3F, 1599-11 Seocho-dong, Seocho-gu, Seoul 137-070, Republic of Korea, do hereby declare that I am familiar with the English language as a Korean and that the attached is a true English translation of the Korean transcript of Korean Patent Application No. **10-2002-0072845** filed with the Korean Intellectual Property Office on **November 21, 2002**.

March 5, 2009

A handwritten signature in black ink, appearing to be "KIM, Hong-rae".

**KIM, Hong-rae**

[ABSTRACT OF DISCLOSURE]

[ABSTRACT]

The present invention relates to a sound card, a computer system using the sound card and a control method thereof. The control method of a computer system having at least one connection port to which an audio apparatus is connected and a plurality of audio circuit parts cooperating according to a type of the audio apparatus, comprises selecting the type of the audio apparatus; connecting an audio circuit part capable of cooperating corresponding to a selected type of the audio apparatus among the plurality of the audio circuit parts and one of the connection ports to each other. Thus, there are provided a sound card to perform its functions even though an audio apparatus is connected to any one of the sound card connection ports, a computer system using the sound card and a control method thereof.

[REPRESENTATIVE DRAWING]

FIG. 2

[SPECIFICATION]

[TITLE OF THE INVENTION]

SOUND CARD, COMPUTER SYSTEM USING THE SOUND CARD AND  
CONTROL METHOD THEREOF

[BRIEF DESCRIPTION OF THE DRAWINGS]

FIG. 1 is a control block diagram of a conventional  
sound card,

FIG. 2 is a control block diagram of a computer system  
according to an embodiment of the present invention,

FIGS. 3A through 3D are views illustrating operation  
states of a user selection window, according to an  
embodiment of the present invention, and

FIG. 4 is a control flow diagram of the computer  
system according to an embodiment of the present invention.

<Reference numerals of elements>

10: control part	20: operating system
30: monitor	40: audio I/O controller
42: input audio circuit part	
44: output audio circuit part	
46: line input audio circuit part	
52: first connection port	
54: second connection port	
56: third connection port	
60: switching part	

[DETAILED DESCRIPTION OF THE INVENTION]

[OBJECT OF THE INVENTION]

[FIELD AND BACKGROUND OF THE INVENTION]

The present invention relates to a sound card, a computer system using the sound card and a control method thereof, and more particularly, to a sound card to perform its function even though an audio apparatus is connected to any one of connection ports, a computer system using the sound card and a control method thereof.

Functions of a computer system have been varied for multimedia implementations in the computer system. Accordingly, the recent computer system has various functions not only to play multimedia, such as a sound, a graphic and a moving picture, but also to implement an Internet phone via the Internet and to process audio through a CD drive. According to a multimedia environment of the computer system, the computer system is generally provided with a sound card to control input/output of a sound.

FIG. 1 is a control block diagram of a conventional sound card. As shown in FIG. 1, the conventional sound card 100 is provided with a speaker connection port 142 to be connected to a speaker 182 or a head set 180, a microphone connection port 144 to be connected to a microphone 184, and a line input connection port 146 to be connected to an external sound apparatus, such as a CD

player 186.

Also, the sound card 100 is provided with an audio I/O controller 120 to control an input/output audio signal. The audio I/O control part 120 comprises an output audio circuit part 122 connected to the speaker connection port 142 and processing an audio signal output to the speaker 182 or the head set 180 connected to the speaker connection port 142; an input audio circuit part 124 connected to the microphone connection port 144 and processing an audio signal received from the microphone 184 connected to the microphone connection port 144; and a line input audio circuit part 126 connected to the line input connection port 146 and processing a line input signal.

The sound card 100 is generally provided as a separate PCB (Printed Circuit Board) and mounted in the computer system, but recently is provided in a main system board of the computer system as one body. Generally, a sound card provided in the main system board is called an On-Board type sound card.

In the conventional sound card 100, the output audio circuit part 122, the input audio circuit part 124 and the line input audio circuit part 126 are fixed and connected respectively to the speaker connection port 142, the microphone connection port 144 and the line input connection port 146. Also, connection standards of the

respective connection ports 142, 144 and 146 are the same. However, in the case that a user connects a jack of the microphone 184 to the speaker connection port 142, the microphone 184 does not electrically cooperate with the input audio circuit part 124 connected to the speaker connection port 142, and thus, does not work.

Particularly, the connection ports 142, 144 and 146 are generally exposed outward from a rear of a main body of the computer system, so that a user has difficulty in accurately connecting a jack of an audio apparatus to a corresponding connection port 142, 144, or 146.

#### [TECHNICAL PROBLEM OF THE INVENTION]

Accordingly, the present invention provides a sound card to perform its function even though an audio apparatus is connected to any one of connection ports, a computer system using the sound card and a control method thereof.

#### [CONFIGURATION OF THE INVENTION]

The present invention may be achieved by a control method of a computer system having at least one connection port to which an audio apparatus is connected and a plurality of audio circuit parts cooperating according to a type of the connected audio apparatus, comprising selecting the type of the audio apparatus, and connecting an audio circuit part capable of cooperating corresponding to a selected type of the audio apparatus, from among the

plurality of the audio circuit parts, to one of the connection ports to each other.

According to an aspect of the invention, the selecting is performed by a type selection program based on an operating system to select the type of the audio apparatus.

According to an aspect of the invention, the selecting of the type of the audio apparatus comprises displaying on a monitor a user selection window for selecting the type of the audio apparatus.

According to an aspect of the present invention, the control method further comprises detecting that the audio apparatus is connected to the connection port, wherein the user selection window is activated on the monitor in a case that connection of the audio apparatus to the connection port is detected.

The present invention may also be achieved by providing a computer system comprising at least one connection port to which an audio apparatus is connected; a plurality of audio circuit parts cooperating according to a type of the audio apparatus; and a control part controlling the connection port to be selectively connected to one of the plurality of the audio circuits.

According to an aspect of the present invention, the control part is operated by a type selection program based on an operating system.



According to an aspect of the present invention, the computer system further comprises a switching part controlled by the type selection program and provided to be selectively connected to the plurality of the audio circuit parts, and thus connecting the connection port and one of the audio circuit parts to each other.

According to an aspect of the invention, the type selection program activates a user selection window for selecting the type of the audio apparatus on a monitor.

According to an aspect of the invention, the type selection program activates the user selection window for selecting the type of the audio apparatus on the monitor in a case that the audio apparatus is connected to the connection port.

According to an aspect of the invention, the user selection window is a port display window to display whether the audio apparatus is connected to a corresponding connection port.

According to an aspect of the invention, the port display window provides an audio apparatus type selection button according to the type of the connection port, and the type selection program controls the switching part so that in a case that the audio apparatus type selection button for a displayed connection port is clicked, the connection port corresponding to the port display window on

which a clicked audio apparatus type selection button is activated and the audio circuit part corresponding to the clicked audio apparatus type selection button are connected to each other.

The present invention may be also achieved by providing a sound card mounted on a computer system to input/output a sound, comprising at least one connection port to which an audio apparatus is connected; a plurality of audio circuit parts operating according to a type of the audio apparatus; and a switching part provided to be selectively connected to the plurality of the audio circuit parts and connecting the connection port and one of the audio circuit parts to each other.

According to an aspect of the present invention, the switching part is controlled by a type selection program stored in the computer system and operating based on an operating system of the computer system.

The present invention will be described below with reference to the accompanying drawings.

FIG. 2 is a control block diagram of a computer system, according to an embodiment of the present invention. As shown in FIG. 2, the computer system comprises connection ports 52, 54 and 56 to which an audio apparatus can be connected; an audio I/O controller 40 having a plurality of audio circuit parts 42, 44 and 46 processing an audio

signal input/output to/from the computer system and cooperating corresponding to a type of the audio apparatus; and a control part 10 to control the connection ports 52, 54 and 56 to be selectively connected to one of the plurality of the audio circuit parts 42, 44 and 46.

Typically, the connection ports 52, 54 and 56 according to the present invention are described, taking a first, a second and a third connection port 52, 54 and 56 having the same standards as an example. For example, each connection port 52, 54 and 56 can receive jacks of the audio apparatuses, such as a speaker 82, a head set 80, and a microphone 84. The audio circuit part 42, 44 and 46 comprise an output audio circuit part 44 processing an audio signal output to an audio device outside of the computer system, an input audio circuit part 42 processing an audio signal received from the outside of the computer system, and a line input audio circuit part 46 processing a line input signal. The output audio circuit part 44 electrically cooperates with the audio apparatus, such as the speaker 82 or the head set 80 to output an audio signal. The input audio circuit part 42 electrically cooperates with the audio apparatus, such as the microphone 84, to receive and input an audio signal to the computer system. The line input audio circuit part 46 electrically cooperates with an audio apparatus such as a CD player 86.

The computer system according to the present invention further comprises a switching part 60 controlled by the control part 10, and selectively connectable to the audio circuit parts 42, 44 and 46 and to the connection ports 52, 54 and 56. Therefore, the control part 10 controls the switching part 60 to selectively connect each connection port 52, 54 and 56 to one of the corresponding compatible input, output and line input audio circuit parts 42, 44 and 46. Thus, for example, even though each audio apparatus such as the speaker 82, the microphone 84 or the CD player 86 is connected to the first connection port 52, the audio apparatus such as the speaker 82, the microphone 84 or the CD player 86 is controlled to be respectively connected to the corresponding compatible audio circuit part 42, 44 or 46. Thus, any of the audio apparatuses can work even though a user connects the audio apparatuses to any one of the connection ports 52, 54 and 56 independent of the types of the audio apparatuses.

Typically, the control part 10 is performed by a type selection program based on an operating system 20 (i.e., an application program interfacing with a user). The type selection program, as an application program executed on the basis of the operating system 20, controls the switching part 60 so that the connection ports 52, 54 and 56 are selectively connected to one of the plurality of the

audio circuit parts 42, 44 and 46 according to a user selected audio apparatus type. According to an aspect of the invention, the operating system 20 can execute the type selection program on booting of the computer system, to thereby enable a user to use the type selection program (to be described later) without a separate executing action.

As shown in FIGS. 3A through 3D, the type selection program activates (displays) a user selection window 70 for selecting the type of the audio apparatus on a monitor 30 of the computer system. FIGS. 3a through 3d illustrate an embodiment of the user selection window 70 activated in the monitor 30 by the type selection program. As shown in FIGS. 3A through 3D, in the user selection window 70 are displayed a first, a second and a third port display window (connection port image) 72, 74 and 76, respectively corresponding to the first, the second and the third connection ports 52, 54 and 56. Each port display window 72, 74 and 76 displays whether the audio apparatus is connected to each connection port 52, 54 and 56, which can be displayed on the port display windows 72, 74 and 76 in various methods, such as color change and/or flicker of colors, to enable port display windows 72, 74 and 76 to be displayed. The display of the connection status of the audio apparatuses on the port display windows 72, 74 and 76 is also implemented by the type selection program.

As shown in FIG. 3B, also, the type selection program displays an audio apparatus type selection button 78 provided according to the types of the audio apparatus to be displayed in each port display window 72, 74 and 76. For example, in the case that a cursor controlled by mouse operation is brought to the port display window 72, 74 or 76, the type selection program recognizes movement of the cursor, and thus controls the audio apparatus type selection button 78 to be displayed for the port display window 72, 74 or 76 where the cursor is positioned. The audio apparatus type selection button 78 comprises a plurality of selection buttons according to the types of the audio apparatuses. For example, FIGS. 3B and 3C illustrate that "SPK", "MIC" and "Line-in" as the selection buttons are displayed, as an embodiment of the audio apparatus type selection button 78.

According to an aspect of the invention, in the case that the audio apparatus is connected to one of the connection ports 52, 54 and 56, the type selection program automatically activates the user display window 70 in the monitor 30. For example, in the case that an audio apparatus is connected to the second connection port 54, the audio I/O controller 40 recognizes the connection of the audio apparatus to the second connection port 54. If the connection of the audio apparatus is recognized by the

audio I/O controller 40, the operating system 20 runs the type selection program. The type selection program activates the user selection window 70 on the monitor 30. At this point, the connection of the audio apparatus is displayed in a second port display window 74 of the user selection window 70 by the method described above.

With the above configuration, a control process of the computer system will be described as follows, with reference to FIGS. 3A through 3D and 4, according to an embodiment of the present invention. At first, in the case that] operation 1, a user connects the audio apparatus, for example, the microphone 84, to the second connection port 54 (S1), the audio I/O controller 40 recognizes that (S2) and transmits connection information to the operating system 20. At this point, the operating system 20 runs the type selection program, and the executed type selection program activates the user selection window 70 on the monitor 30 (S3). In this case, the connection of the audio apparatus is displayed by, for example, the second port display window 74 of the activated user selection window 70 (refer to FIG. 3a).

Thereafter, in the case that a user clicks the second port display window 74 displayed on the monitor 30 by using the mouse, the audio apparatus type selection button 78 is activated in the second port display window 74 (refer to

FIG. 3B). Subsequently, in the case that a user clicks the "MIC" button (S4), the type selection program controls the switching part 60 so that the second connection port 54 corresponding to the second port display window 74 in which the type selection button 78 is displayed and the input audio circuit part 42 corresponding to the "MIC" button are connected to each other, to make the second connection port 54 and the output audio circuit part 44 connected to each other (S5). Further, if a user clicks the "MIC" selection button in the audio apparatus type selection button 78 of the second port display window 74, as shown in FIG. 3D, the audio apparatus type "MIC" is displayed on the second port display window 74 indicating that the second connection port 54 and the input audio circuit part 42 are connected to each other. Also, the first and the third port display windows 72 and 76 work the same way as the described second port display window 74. The "MIC" button and the "Line-in" button correspond, respectively, to the input audio circuit part 42 and the line input audio circuit part 46.

According to the present invention, the connection ports 52, 54 and 56, the switching part 60, and the audio circuit parts 42, 44 and 46 can be provided on a separate sound card to be mounted on the computer system. Also, the switching part 60 and the audio circuit parts 42, 44 and 46 can be mounted on a main system board and the connection



ports 52, 54 and 56 can be exposed outward of the computer system by a separate cable.

Also, although in the above described embodiment, only three connection ports 52, 54 and 56 are provided, but the connection ports are included in the scope of the invention independent of the number of the connection ports.

According to the present invention, a sound card performs its function even though an audio apparatus is connected to at least one of connection ports 52, 54 and 56 by providing a plurality of audio circuit parts 42, 44 and 46 operating according to a type of the audio apparatus and a control part 10 controlling each connection port 52, 54 or 56 to be selectively connected to a compatible one of the plurality of the audio circuit parts 42, 44 and 46.

#### [Effects of the Invention]

As described above, according to the present invention, there are provided a sound card to perform its function even though an audio apparatus is connected to any one of connection ports, a computer system using the sound card and a control method thereof.

[CLAIMS]

WHAT IS CLAIMED IS:

1. A control method of a computer system having at least one connection port to which an audio apparatus is connected and a plurality of audio circuit parts operating according to a type of the audio apparatus, comprising:

selecting the type of the audio apparatus;

connecting an audio circuit part cooperable with the selected [type of the] audio apparatus type from among the plurality of the audio circuit parts and one of the connection ports to each other.

2. The control method of the computer system according to claim 1, wherein the selecting is performed by a type selection program based on an operating system to select the type of the audio apparatus.

3. The control method of the computer system according to claim 2, wherein the selecting of the type of the audio apparatus comprises displaying a user selection window for selecting the type of the audio apparatus on a computer system monitor by the type selection program.

4. The control method of the computer system according to claim 3, further comprising detecting that the

audio apparatus is connected to the connection port, wherein the user selection window is displayed on the monitor in a case that connection of the audio apparatus to the connection port is detected.

5. A computer system comprising:

at least one connection port to which an audio apparatus is connected;

a plurality of audio circuit parts operating according to a type of the audio apparatus; and

a control part to control the connection port to be selectively connected to one of the plurality of the audio circuits.

6. The computer system according to claim 5, wherein the control part is operated by a type selection program based on an operating system.

7. The computer system according to claim 7, further comprising a switching part controlled by the type selection program and provided to be selectively connected the plurality of the audio circuit part, and thus connecting the connection port and one of the audio circuit parts to each other.

8. The computer system according to claim 7, wherein the type selection program displays a user selection window for selecting the type of the audio apparatus on a monitor.

9. The computer system according to claim 8, wherein the type selection program displays the user selection window for selecting the type of the audio apparatus on the monitor in a case that the audio apparatus is connected to the connection port.

10. The computer system according to claim 9, wherein in the user selection window is provided a connection port display window to display whether the audio apparatus is connected to a corresponding connection port.

11. The computer system according to claim 10, wherein the port display window provides an audio apparatus type selection button according to the type of the connection port, and the type selection program controls the switching part so that if the audio apparatus type selection button is selected for a displayed connection port, the connection port corresponding to the displayed connection port with the selected audio apparatus type selection button is activated by connecting the audio

circuit part corresponding to the selected audio apparatus type selection button with the corresponding connection port.

12. A sound card mounted on a computer system and inputting/outputting a sound, comprising:

at least one connection port to which an audio apparatus is connected;

a plurality of audio circuit parts operating according to a type of the audio apparatus; and

a switching part provided to be selectively connected to the plurality of the audio circuit parts and connecting the connection port and one of the audio circuit parts to each other.

13. The sound card according to claim 12, wherein the switching part is controlled by a type selection program stored in the computer system and operating on basis of an operating system of the computer system.

FIG. 1  
(PRIOR ART)

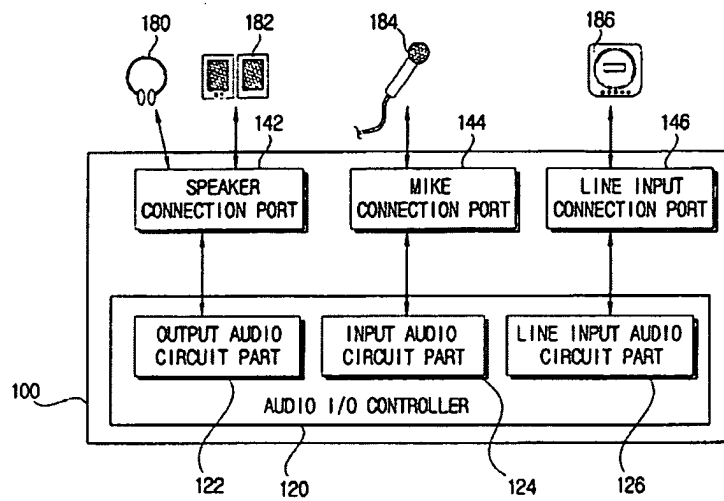


FIG. 2

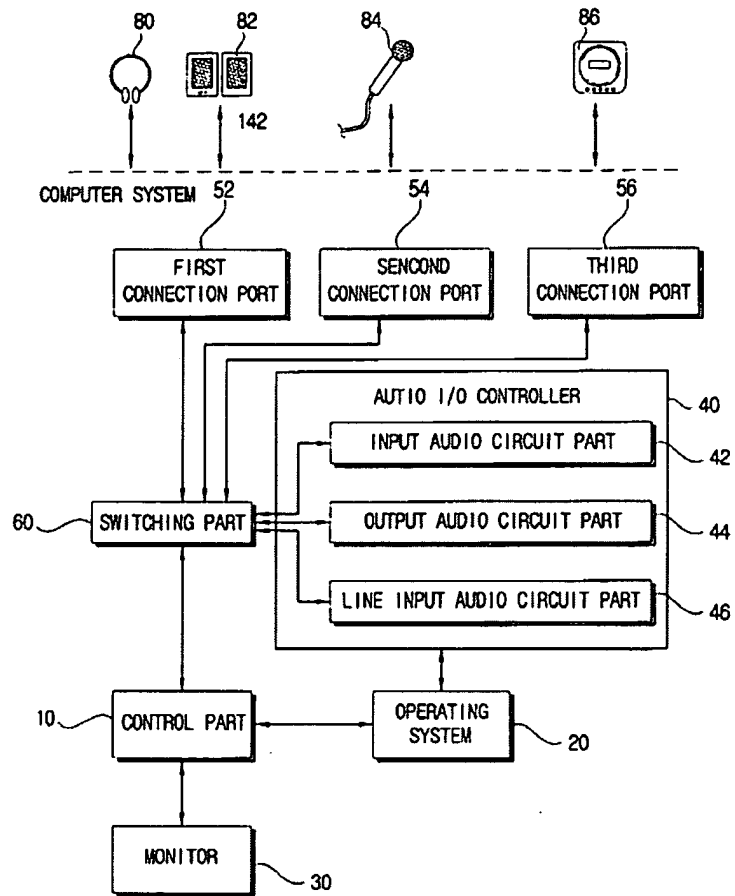


FIG. 3A

(A)

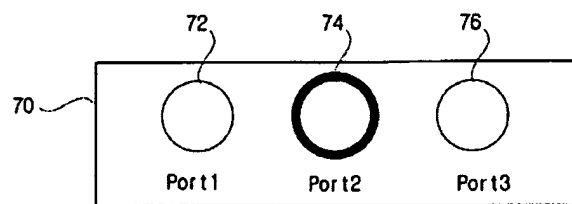




FIG. 3B

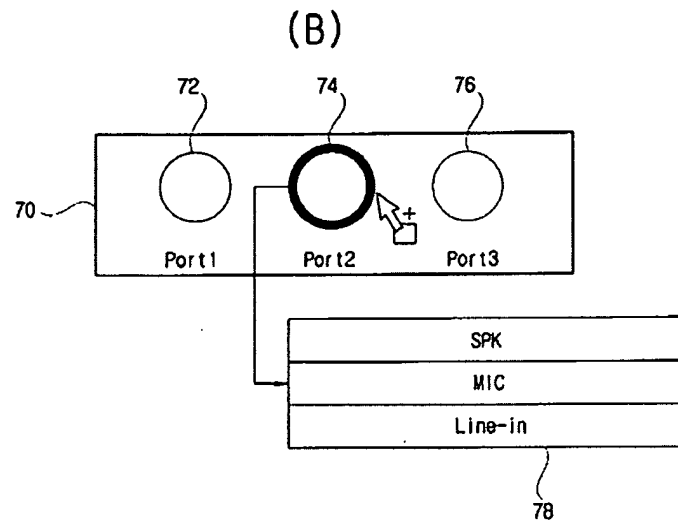


FIG. 3C

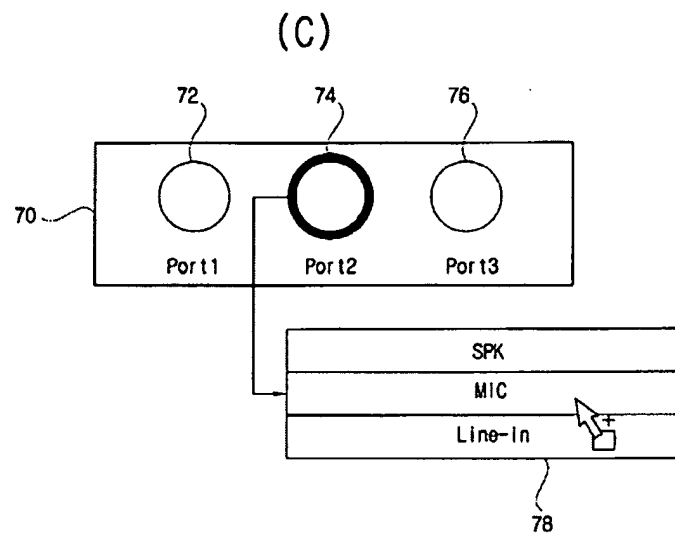


FIG. 3D

(D)

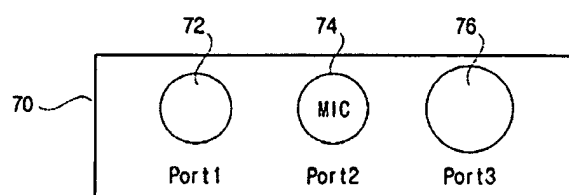


FIG. 4

